

## ABSTRACT

Chemical polymerization procedures initiated by, and proceeding from, a biomolecule, particularly a protein, for the formation of biomolecule-polymer conjugates, particularly protein-polymer conjugates, which have therapeutic uses, are intermediates for forming other materials or are usable in diagnostic sensors are disclosed. Polymerization can be initiated by a protein in the absence of additional initiation agents to form the protein-polymer conjugate. Alternatively, polymerization is initiated in the presence of an additional initiation agent that does not interact with the protein. Amino acids existing in the protein can serve as the sites for initiation of the polymerization or the protein can be modified to contain site(s) for initiation or protein with active sites can be prepared by recombinant methods, chemical ligation, solid-phase synthesis, or other techniques to generate site(s) for initiation.